# The birds of Okhla barrage bird sanctuary, Delhi, India

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Okhla barrage bird sanctuary, on the river Yamuna in south Delhi, is an important site for breeding and wintering waterbirds, with 14,000–20,000 waterbirds recorded in winter. The dominant feature of the site is a large lake formed after the creation of a barrage on the river in 1986. Historical records, records resulting from fieldwork since 1989, and other recent records have been combined to produce a list of 302 species for the site and its immediate area. Species recorded since 1992 include three Vulnerable species (Baer's Pochard Aythya baeri, Indian Skimmer Rynchops albicollis and Bristled Grassbird Chaetornis striatus) and six Near Threatened species (Ferruginous Pochard Aythya nyroca, Black-bellied Tern Sterna acuticauda, Darter Anhinga melanogaster, Black-headed Ibis Threskiornis melanocephalus, Painted Stork Mycteria leucocephala and Black-necked Stork Ephippiorhynchus asiaticus). The sanctuary is being encroached upon, and isolated by, surrounding development.

## **INTRODUCTION**

The Okhla barrage bird sanctuary in Delhi is a haven for waterbirds (Singh 1983, Urfi 1993a, b, 1995). In 1990, an area of c.3.5 km² on the river Yamuna in Delhi was notified as a bird sanctuary by the Uttar Pradesh government under the Wildlife Protection Act of India. The site is located at the point where the river leaves the territory of Delhi and enters the neighbouring state of Uttar Pradesh (Fig. 1). The most prominent feature of the sanctuary is the large lake created by damming the river, which lies sandwiched between Okhla village towards the west and Gautambudh Nagar towards the east.

Historically, the areas around Okhla, encompassing the river Yamuna and the marshes associated with it, have been a favorite haunt for birdwatchers. Major-General H. P. W. Hutson recorded the birds of Okhla during the course of his ornithological surveys in the Delhi region during June 1943 to May 1945. Subsequently, Mrs Usha Ganguli also recorded the avifauna from this site in her book, *A guide to the birds of the Delhi area* (Ganguli 1975). Following the construction of a barrage and the resulting lake in 1986, birdwatching activity has increased at this site.

The aim of this paper is to review the avifauna of this site by combining my own observations with other published and unpublished records, and to discuss some of the conservation issues of this important reserve.

#### **STUDY AREA**

Okhla is one among the several ornithologically significant sites along the 35 km stretch of the river Yamuna in Delhi (Ganguli 1975). The aquatic vegetation of this stretch of river is diverse (Gopal and Sah 1993). Reed beds (*Typha angustata* and *Phragmites maxima*) are abundant in the marshy areas. The submerged vegetation includes *Hydrilla verticillata, Vallisneria spiralis, Potamogeton pectinatus, P. crispus, Najas* sp. Patches of water hyacinth *Eichhornia crassipes* form dense mats. *Salvinia molesta* and *Alternanthera philoxeriodes* are also

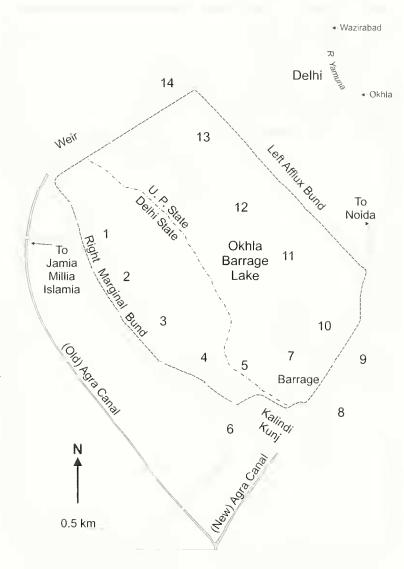


Figure 1. Map of Okhla barrage bird sanctuary showing the main habitat areas (1–14) described in the text. The dashed line denotes the boundary of the bird sanctuary; the dashed and dotted line demarcates the state border between Delhi and Uttar Pradesh. Note the location of the weir, old and new Agra canal and the barrage. Inset shows the course of the river Yamuna in Delhi and the location of Wazirabad (where the river enters Delhi) and Okhla (where it leaves the territory of Delhi).

found in the river. Trees and bushes such as *Tamarix dioica*, *Prosopis* spp. and *Ficus* spp. occur along with *Ipomoea fistulosa*. At low water levels during the summer much of the exposed riverbed is cultivated. Four main habitats occur:

Shallow vegetated areas (areas 1–5 in Fig. 1): On the west bank are seven 'spurs' (projections of the bank into the lake). The areas between the spurs have shallow water with diverse vegetation consisting of emergents, free-floating plants, submerged plants and a few woody species.

Deep areas (areas 7, 10 and 12 in Fig. 1): The deepest parts of the lake (4–5 m) are close to the barrage. The water level is variable depending upon the amount of water released through the two inflows at Wazirabad and Hindon. Over recent years there appears to have been a considerable reduction in the average depth as a result of siltation.

*Ponds* (areas 9 and 14 in Fig. 1): Two ponds were formerly used by local farmers to cultivate water chestnut *Trapa*, but the second (area 14) was largely destroyed by road building in 2001.

Reed beds (areas 6 and 13 in Fig.1), sand flats and grassy areas (area 8 in Fig.1): On the south side of the barrage lie extensive reedbeds, areas overgrown with terrestrial grasses, and sandflats on the river floodplain.

#### **METHODS**

Observations were carried out during 1989–2002. The site was visited particularly regularly during 1989–1991 (approximately 45 trips), but much less intensively during 1996-2002. On many occasions during this period I was accompanied by birdwatchers from Delhi (see acknowledgements) and the checklist presented in the appendix is the outcome of this collaboration. It also includes historical records from Hutson (1954) and Ganguli (1975) and recent records from Harris (2001), Vyas (1996, 2002) and others. Conservation status was taken from BirdLife International (2001). I counted waterfowl separately in each of the areas of the barrage depicted in Fig 1. Since, on any given day it was not possible to cover all the areas of the lake I focused on the areas between the spurs (1-5), the two ponds (9, 14) and as far as possible the middle of the barrage (areas 7, 10, 11, 12).

# SIGNIFICANT BIRD RECORDS

A total of 302 species have confirmed records from Okhla bird sanctuary and the areas in its immediate vicinity (see Appendix). An additional 27 species have been listed by Harris (2001) as probable, but unconfirmed, occurrence. The total Okhla list includes two Critically Endangered (CR) species (White-rumped Vulture and Indian Vulture), nine Vulnerable (VU) species (Baikal Teal, Baer's Pochard, Sarus Crane, Sociable Lapwing, Indian Skimmer, Pallas's Fish Eagle, Lesser Adjutant, Bristled Grassbird and Finn's Weaver), seven Near Threatened (NT) species (Ferruginous Pochard, Black-bellied Tern, Grey-headed Fish Eagle,

Darter, Black-headed Ibis, Painted Stork and Black-necked Stork) and one Conservation Dependent (CD) species (Dalmatian Pelican), for which details are presented below. Of these, only three Vulnerable and six NearThreatened species have been recorded during the period 1992–2002.

BAIKAL TEAL Anas formosa (VU) Recorded as a winter visitor to northern India, from Gujarat and Haryana east to Assam and south to south West Bengal (Grimmett et al. 1998). On 12 May 1947, R. S. Symons observed a solitary male on the Yamuna sandbank, below Humayun's Tomb, a few kilometres upstream from Okhla (Ganguli 1975). There have been no subsequent records from Okhla or elsewhere in Delhi.

Ferruginous Pochard Aythya nyroca (NT) Breeds in Baluchistan, Pakistan, Kashmir and Ladakh. Recorded as a widespread winter visitor to the subcontinent south to north-east Tamil Nadu (Grimmett et al. 1998). In the Delhi region this species was recorded as a fairly common winter visitor (Ganguli 1975). In January 1969, a few hundred were seen in association with other ducks on the Yamuna (Ganguli 1975). Harris (2001) recorded it as a scarce winter visitor to Okhla, with about 20 being recorded during January 2002.

BAER'S POCHARD Aythya baeri (VU) Recorded as a winter visitor, mainly to north-east India and Bangladesh. In India, this species is locally fairly regular in the north-east, but uncommon and erratic elsewhere (Grimmett et al. 1998). A pair was recorded by W. Harvey on 11 January 2001 (Harris 2001).

Sarus Crane Grus antigone (VU) Recently recorded mainly from Gujarat and Rajasthan, eastwards to eastern Uttar Pradesh and south Madhya Pradesh. Its former distribution ranged from Pakistan and Kashmir east to Assam and south to northern Andhra Pradesh (Grimmett et al. 1998). Although there has been a considerable decline in its range, this species is still locally common in west and central India. It used to be resident and fairly common in the Delhi region (Ganguli 1975). In the present study, pairs were sighted sporadically from the agricultural fields and marshes outlying the lake prior to 1992. One such area has now been destroyed by a newly built motorway. There have not been any recent sightings from Okhla.

Sociable Lapwing Vanellus gregarius (VU) In the subcontinent this species is a winter visitor, now rare, but formerly regular and fairly common in Pakistan, north-west India and Uttar Pradesh, occurring erratically east to West Bengal and south to Kerala and Sri Lanka (Grimmett et al. 1998). The observation by Hutson (1954) of a few feeding along the muddy edge of a creek in the Okhla marshes is the only record of this species from the site, although there have been several sightings from the Delhi region (Ganguli 1975). It was listed as a vagrant by Harris (2001), but there have been no recent sightings.

Indian Skimmer Rynchops albicollis (VU) In the subcontinent the distribution range of this species includes large rivers in Pakistan, mainly north and

central India, Nepal and Bangladesh. In India, it was formerly widespread and locally fairly common, but now it is rare in most areas except in Gujarat and Punjab, where it may be locally fairly common (Grimmett *et al.* 1998). This species was recorded from the Yamuna by Ganguli (1975) who described it as 'being more frequent in summer and often in small flocks'. Now it is a rare visitor to Okhla (Harris 2001), with flocks of up to seven sighted in August 1998, January 2001 and August 2001.

BLACK-BELLIED TERN Sterna acuticauda (NT) Resident throughout much of the subcontinent, except parts of the north-east, north-west, Himalayas and Sri Lanka. In India it is recorded as widespread and locally fairly common (Grimmett et al. 1998). Ganguli (1975) recorded it as resident and fairly common on the river Yamuna. Harris (2001) recorded it as scarce in summer and rare in winter. Six birds seen in September 2001 are the most recent sight records (Harris 2001).

Pallas's Fish Eagle Haliaeetus leucoryphus (VU) Resident and winter visitor to the subcontinent, recorded mainly from Pakistan and from Kashmir east to north-east India and south to Gujarat, Orissa and central Bangladesh (Grimmett et al. 1998). A number of previous breeding records from Okhla were summarized by Ganguli (1975) but the current status is uncertain; it is unlikely that it still breeds at Okhla. Recent sightings include single immatures seen on several occasions during December 1985 to January 1986 (Harris 2001).

Grey-Headed Fish Eagle *Ichthyophaga ichthyaetus* (NT) Resident and widespread in India, locally frequent in the north-east, but scarce and very local in the peninsula (Grimmett *et al.* 1998). Ganguli (1975) recorded a few sightings from the Yamuna including those by Frome at Okhla, chiefly from October to April (year not given but most probably during 1931–1945). There are no recent records from Okhla.

White-Rumped Vulture Gyps bengalensis (CR) Resident throughout most of the subcontinent, formerly common and widespread in the plains and hills up to 2,500 m (Grimmett et al. 1998). This species used to be fairly common and resident prior to 1992, with flocks numbering 25–30 regularly seen roosting on trees on the eastern bank of the old Agra canal. There have not been any records in recent years, and the disappearance of this and the following species from Okhla are probably associated with the decline of Gyps vultures throughout the region.

INDIAN VULTURE Gyps indicus (CR) Resident in southeast Pakistan and peninsular India south of the Gangetic plain (Grimmett et al. 1998). This species used to be regularly sighted, although always in lesser numbers compared to the previous species. It has not been sighted at Okhla since 1992.

Darter Anhinga melanogaster (NT) A widespread resident in India, locally common in Assam (Grimmett et al. 1998). While certainly a breeding resident in nearby areas (Urfi 1993b), this species does not breed in the immediate vicinity of Okhla. However, up to five are regularly seen in the Okhla barrage lake.

BLACK-HEADED IBIS *Threskiornis melanocephalus* (NT) Widespread and locally common in India except in parts of north-west and east (Grimmett *et al.* 1998). This species breeds regularly in the area of Delhi zoo (Urfi 1997) and it can be sighted in flocks of up to 50 birds at Okhla fairly regularly.

Dalmatian Pelican Pelecanus crispus (CD) Winter visitor to the subcontinent, formerly recorded from Pakistan east to Assam but now winters mainly in south Pakistan, Gujarat and Rajasthan (Grimmett et al. 1998). This species was described as a rare winter visitor to the Delhi region by Ganguli (1975). On 30 January 1990, three birds were seen from the west bank of Okhla in the areas between the spurs.

PAINTED STORK Mycteria leucocephala (NT) Widespread and locally common throughout the plains in India, except parts of the north-east and north-west (Grimmett et al. 1998). This species is sighted at Okhla regularly in flocks of up to 80. Okhla is an important feeding ground for the 300–500 birds that breed in the area of Delhi zoo (Urfi 1997).

BLACK-NECKED STORK Ephippiorhynchus asiaticus (NT). In India this species is still a widespread resident, but it is now rare, with its main strongholds in the north, north-west and north-east (Grimmett et al. 1998). About 3–5 birds were seen regularly at Okhla during 1989–1992. Recent sightings include three birds in September 2000 (Harris 2001).

LESSER ADJUTANT Leptoptilos javanicus (VU) In India, this species has declined and it is now locally common in Assam and widely distributed, but rare, elsewhere (Grimmett et al. 1998). Six birds were sighted on the island in the middle of the barrage on 4 Febuary 1990, but there have been no other recent sightings (Harris 2001).

BRISTLED GRASSBIRD Chaetornis striatus (VU) In India this species was formerly common in Gujarat, Andhra Pradesh and West Bengal, but there are very few recent published records (Grimmett et al. 1998). A specimen was collected at Okhla by Donahue (1967), and five birds were sighted in 1996; the species may be an irregular summer visitor to the site (Grewal 1996, Vyas 2002).

FINN'S WEAVER *Ploceus megarhynchus* (VU) In India, this species is uncommon and very local in the plains and terai (Grimmett *et al.* 1998). Harris (2001) speculated that a few individuals observed nest-building at Okhla in 1993 may have been escaped cagebirds, but they could equally have spread downriver from Meerut, where they were first recorded breeding in 1979 (Rai 1979). Its status at the site remains uncertain (Harris 2001).

#### WATERBIRDS

The relative abundance and maximum counts of some common waterbirds are given in Table 1. Neither Hutson (1954) nor Ganguli (1975) mention large flocks of wintering ducks at Okhla, so this may be a recent

phenomenon that developed after the creation of the Okhla barrage and the resulting lake.

#### CONSERVATION

Due to heavy siltation some parts of the barrage have become considerably shallower and this has permitted the growth of reeds, particularly at the junction of the weir and the left afflux bund and also in the areas between the spurs. In what ways these changes in the water depth will affect the communities of wintering and resident waterfowl remains to be investigated. Due to urban and industrial developments over the past few decades there has been a considerable loss of the remaining semi-natural marshes and open fields around the Yamuna in Delhi (Anon. 1993). Okhla barrage bird sanctuary is rapidly becoming an island in a concrete jungle. The wintering ducks at Okhla are dependent upon the surrounding area, especially the grassy patches, agricultural fields and marshes around the barrage for feeding. As more and more areas around the barrage are built up, these habitats are disappearing and so it is important to take stock of the land development

schemes and try to build a buffer zone around the Okhla barrage bird sanctuary.

The river Yamuna in Delhi is heavily polluted, mainly due to the discharge of about 18 drains, including the large Najafgarh drain. About 320,000 kilolitres of untreated sewerage is discharged daily into the river, carrying high concentrations of pesticides and heavy metals (Anon. 1993). The pollution load at Okhla is the highest along the 1,170 km stretch of the Yamuna through the Indo-Gangetic plains (Gopal and Sah 1993). Further investigation of the importance of this threat is required.

Local people use the sanctuary for fishing, cremation, sand-mining, washing cattle, boating and other recreational activities. Birds sometimes get entangled in the fishing nets, so this activity needs to be regulated in the sanctuary. Local people and local tourists also poach birds by shooting. During this study, shooting was seen taking place on five out of 16 trips during 1989–1990. However, forest department staff claim that the number of incidents has reduced recently due to better policing.

For the development of the sanctuary I recommend the creation of mounds in the middle of the lake planted

Table 1. The relative abundance and maximum counts of some common waterbirds at Okhla barrage.

Species	Relative abundance <sup>1</sup>	Maximum count 1989-1990	Lopez and Mundkur (1997) <sup>2</sup>
Lesser Whistling-duck	6.3	5	30
Greylag Goose	6.3	3	
RUDDY SHELDUCK	56.3	100	59
COMMON SHELDUCK			12
COTTON PYGMY-GOOSE	31.3	12	
GADWALL	50	450	4,000
Eurasian Wigeon	50	140	800
Mallard	18.8	125	60
Spot-billed Duck	56.3	100	60
Northern Shoveler	62.5	2,500	4,000
Northern Pintail	43.8	3,600	7,000
GARGANEY	12.5	42	
COMMON TEAL	6.3	75	1,200
RED-CRESTED POCHARD	12.5	90	70
COMMON POCHARD	68.8	900	600
Ferruginous Pochard	31.3	140	
Tufted Duck	62.5	1,200	150
COMMON KINGFISHER	18.8	2	
WHITE-THROATED KINGFISHER	43.8	5	
PIED KINGFISHER	25	2	
Sarus Crane	6.3	2	
White-breasted Waterhen	18.8	6	
PURPLE SWAMPHEN	43.8	80	
COMMON MOORHEN	12.5	4	
COMMON COOT	100	5,000	3,000
Pheasant-tailed Jacana	12.5	2	
Bronze-winged Jacana	6.3	4	
LITTLE GREBE	81.3	200	40
Great Crested Grebe	31.3	5	
LITTLE CORMORANT	50	40	10
Indian Cormorant	25	25	
Great Cormorant	18.8	10	1

Relative abundance was estimated as the proportion of visits that the species was seen (from a total of 16 visits during 18 October 1989 to 6 March 1990)

From estimates given by Lopez and Mundkur (1997) extrapolated from data collected in 1995 by S. Madge from areas 3–8 and 10 in Fig.1 (S. Madge pers. comm. 1995)

with appropriate tree species to encourage nesting by colonial waterbirds. Given the ornithological significance of the site, especially the large concentrations of migratory waterfowl, it should be considered for possible inclusion in the list of Ramsar sites. Regular monitoring of the waterfowl populations of the sanctuary should be undertaken by the forest department. In this task the skills and enthusiasm of numerous amateur birdwatchers based in Delhi could be utilized, as for instance is being done by forest department officials to census the birds of Nalsarovar bird sanctuary in Gujarat (Urfi 2000). Finally, I recommend the initiation of environmental education programmes, to increase awareness and appreciation of the importance of Okhla bird sanctuary for biodiversity among visitors and residents.

### **ACKNOWLEDGEMENTS**

The compilation of the checklist of the birds of Okhla barrage would have been impossible but for the active collaboration and help received from Bikram Grewal and other birdwatchers from Delhi, especially Suresh Sharma, Raj Bhutani, Otto Pfister and Ravi Singh. I thank Steve Madge for sending me data and to Krys Kazmierczak for answering my queries. I wish to express my gratitude to Prof. C. R. Babu and Prof. T. R. Rao, both from the University of Delhi and to Prof. L. K. Pande, from Jawaharlal Nehru University, for encouraging me to carry on with my field studies. I wish to record my thanks to the forest department staff, particularly Mr Sharma for supplying me relevant information about the site. I am grateful to Clive Harris for giving permission to use some of his data on the birds of Okhla, Nikhil Devasar for help during the preparation of the manuscript and to Tim Inskipp for tracing many records. Lastly, I wish to acknowledge the financial support received from the Council for Scientific and Industrial Research, New Delhi and the Ministry of Environment and Forests, Government of India during the field work and writing up phase, respectively.

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# **APPENDIX**

# Checklist of birds recorded at Okhla

Species	Status	Notes
Black Francolin Francolinus francolinus		
GREY FRANCOLIN Francolinus pondicerianus	R, C	
RAIN QUAIL Coturnix coromandelica	R, O	Occasionally seen in August (Ganguli 1975)
Indian Peafowl Pavo cristatus	R, UC	
Lesser Whistling-duck Dendrocygna javanica	R, UC	Nesting recorded (Urfi 1996).
Greater White-fronted Goose Anser albifrons	V	One immature on 21 January 1986 (SV)
Greylag Goose Anser anser	W, O	
Bar-headed Goose Anser indicus	W, UC	10-20 often present; maximum 150 in March 1986 (Vyas 1996), but winter populations during 1995-1998 did not exceed 10 (Vyas 2002)
RUDDY SHELDUCK Tadorna ferruginea	W, C	> 100 present each year
Common Shelduck Tadorna tadorna	W, O	Regularly recorded in winter during 1990s:11 through December 1995, 12 on 16 March 1997 and 14 through February 1998 (Vyas 2002)
COMB DUCK Sarkidiornis melanotos	?, UC	
COTTON PYGMY-GOOSE Nettapus coromandelianus	?, UC	Small numbers occur in March-October
GADWALL Anas strepera	W, UC	
FALCATED DUCK Anas falcata	V	One in September 1979 (SV)
Eurasian Wigeon Anas penelope	W, UC	
Mallard Anas platyrhynchos	W, UC	
SPOT-BILLED DUCK Anas poecilorhyncha	R,C	
Northern Shoveler Anas clypeata	W, C	
Northern Pintail Anas acuta	W, C	
GARGANEY Anas querquedula	PM, C	
BAIKAL TEAL Anas formosa	V	See text
Common Teal Anas crecca	W, C	
Red-crested Pochard Rhodonessa rufina	W, UC	
Common Pochard Aythya ferina	W, C	
Ferruginous Pochard Aythya nyroca	W, UC	See text
Baer's Pochard Aythya baeri	V	A pair in January 2001 (WGH)
Tufted Duck Aythya fuligula	W, C	
Greater Scaup Aythya marila	V	. A pair in February 1998 (Vyas 2002) and one in November 2001 (DBC)
Common Goldeneye Bucephala clangula	V	A drake seen on 24 November 1963 near Okhla (Ganguli 1975)
Smew Mergellus albellus	V	Sutherland (1992)
YELLOW-LEGGED BUTTONQUAIL Turnix tanki	?, O	One in May is the only record from Delhi; the year is not mentioned but most probably during 1960–1970 (Ganguli 1975)
BARRED BUTTONQUAIL Turnix suscitator	R, O	A pair with three chicks in dry scrub a few km south of Okhla; the year is not mentioned but most probably during 1960–1970 (Ganguli 1975)
Eurasian Wryneck Jynx torquilla	W, O	Hutson (1954) noted this species favouring 'babool' plantations near Okhla
YELLOW-CROWNED WOODPECKER Dendrocopos mahrattensis	R, UC	Nesting recorded in April 1968 (Ganguli 1975)
Black-rumped Flameback Dinopium benghalense	R, UC	Presumed resident in the plantations near the old Agra canal
Brown-headed Barbet Megalaima zeylanica	R, C	
Coppersmith Barbet Megalaima haemacephala	R, C	
Indian Grey Hornbill Ocyceros birostris	R, C	
Соммон Ноорое <i>Uрира ерор</i> ѕ	R, C	
European Roller Coracias garrulus	PM	One in September 1999 (GH, JH, EW)
Indian Roller Coracias benghalensis	?, C	
Common Kingfisher Alcedo atthis	R, UC	
White-throated Kingfisher Halcyon smyrnensis	R, C	
Pied Kingfisher Ceryle rudis	?, UC	
Green Bee-eater Merops orientalis	R, C	
Blue-cheeked Bee-eater Merops persicus	M, UC	Summer visitor in April-October (Ganguli 1975)
Blue-tailed Bee-eater Merops philippinus	M, UC	Monsoon visitor in July-October (Ganguli 1975)

Species	Status	Notes
PIED CUCKOO Clamator jacobinus	M, UC	Monsoon visitor in June-September (Ganguli 1975)
LARGE HAWK CUCKOO Hierococcyx sparverioides	PM	One in September 2000 (WGH)
Common Hawk Cuckoo Hierococcyx varius	?, UC	Summer visitor in February-October (Ganguli 1975)
Asian Koel Eudynamys scolopacea	R, C	
GREATER COUCAL Centropus sinensis	R, UC	Specimen collected by Donahue (1967) near Okhla
ALEXANDRINE PARAKEET Psittacula eupatria	R, UC	
Rose-ringed Parakeet Psittacula krameri	R, C	
PLUM-HEADED PARAKEET Psittacula cyanocephala	R, UC	
ASIAN PALM SWIFT Cypsiurus balasiensis	V	One on 17 March 1979 (Vyas 1996)
House Swift Apus affinis	R, C	
Eurasian Eagle Owl <i>Bubo bubo</i>	R(?), O	Singles/pairs in trees along the Agra canal recorded by Hutson (1954)
Brown Fish Owl Ketupa zeylonensis	R(?), O	Recorded by Hutson (1954)
Spotted Owlet Athene brama	R, C	
SHORT-EARED OWL Asio flammeus	PM, O	Recorded in reedbeds by Hutson (1954); recent sightings include two on 17 March 1979 and one on 8 March 1986 (Vyas 1996)
Indian Nightjar Caprimulgus asiaticus	?, O	
SAVANNA NIGHTJAR Caprimulgus affinis	?, O	
Rock Pigeon Columba livia	R, C	
LAUGHING DOVE Streptopelia senegalensis	R, C	
SPOTTED DOVE Streptopelia chinensis	?, O	
RED COLLARED DOVE Streptopelia tranquebarica	?, UC	
Eurasian Collared Dove Streptopelia decaocto	R, C	
YELLOW-FOOTED GREEN PIGEON Treron phoenicoptera	R, UC	
Sarus Crane Grus antigone	LM, O	See text
Demoiselle Crane Grus virgo	W, O	Two flocks of c.80 and 26 birds on 29 September 1996 (Vyas 2002)
Common Crane Grus grus	W, O	Flocks of c.150 noted in late March 1979 and 1985 (Vyas 1996)
Brown Crake Amaurornis akool	R, O	Breeding recorded (Ganguli 1975); specimen collected by Donahue (1967); also recorded by Vyas (1996) in both summer and winter
WHITE-BREASTED WATERHEN Amaurornis phoenicurus	R,C	
Baillon's Crake Porzana pusilla	PM?, O	Recorded by Ganguli (1975); Vyas (1996) noted small numbers (<10) occur in March
RUDDY-BREASTED CRAKE Porzana fusca	R, S	Recorded by Ganguli (1975); specimen collected by Donahue (1967); also recorded in winter 1985–1986 at Madanpura, a few km downstream from Okhla (Vyas 1996)
Watercock Gallicrex cinerea	R, UC	Recorded during June-August 1996-1998 (Vyas 2002)
Purple Swamphen Porphyrio porphyrio	R, C	
Соммон Moorhen Gallinula chloropus	R, C	
Common Coot Fulica atra	W, C	
BLACK-BELLIED SANDGROUSE Pterocles orientalis	W, O	Male recorded on 4 May 1968 (Ganguli 1975)
PINTAIL SNIPE Gallinago stenura	W, O	Holman (1987)
Common Snipe Gallinago gallinago	W, UC	
BLACK-TAILED GODWIT Limosa limosa	W, UC	
Eurasian Curlew Numenius arquata	W, UC	
SPOTTED REDSHANK Tringa erythropus	W(?), O	Recorded by Hutson (1954) during 1943–1945
COMMON REDSHANK Tringa totanus	W, PM, C	
Marsh Sandpiper Tringa stagnatilis	W, PM, O	
Common Greenshank Tringa nebularia	W, UC	
Green Sandpiper Tringa ochropus	W, UC/O	
Wood Sandpiper Tringa glareola	W, UC	
Terek Sandpiper Xenus cinereus	V	One in breeding plumage on 9 May 1979 (Vyas 1996)
COMMON SANDPIPER Actitis hypoleucos	W, C	
LITTLE STINT Calidris minuta	W, PM, C	Up to several hundred in April–mid May (Vyas 1996)
TEMMINCK'S STINT Calidris tenuminckii	W, C	
DUNLIN Calidris alpina	W, UC	Occasionally seen in early May (Vyas 1996)
Curlew Sandpiper Calidris ferruginea	PM, O	Common in spring; one autumn record of about 10 on 21 October 1985 (Vyas

Species	Status	Notes
Ruff Philomachus pugnax	W, C	Two males stayed as late as 9 June 1986 (Vyas 1996)
Greater Painted-snipe Rostratula benghalensis	R, UC	
PHEASANT-TAILED JACANA Hydrophasianus chirurgus	R, UC	
Bronze-Winged Jacana Metopidius indicus	R, UC	Nesting recorded (Urfi 1996)
Eurasian Thick-knee Burhinus oedicnemus	R, UC	Nesting recorded (Ganguli 1975)
GREAT THICK-KNEE Esacus recurvirostris	R(?), O	Flocks of 20 and 50+ recorded by Ganguli (1975)
BLACK-WINGED STILT Himantopus himantopus	LM, C	
PIED AVOCET Recurvirostra avosetta	R, UC	Present in both summer and winter (Vyas 1996)
COMMON RINGED PLOVER Charadrius hiaticula	V	Holman (1993); Slack (1994), Sutherland (1992)
LITTLE RINGED PLOVER Charadrius dubius	W, R, UC	Freshly hatched chick recorded in March from Okhla (Ganguli 1975)
KENTISH PLOVER Charadrius alexandrinus	W, PM, U	C Recorded in January 1991 and November 1993 (S. Madge <i>in litt.</i> 2002); a pair also recorded in breeding plumage in mid-June (undated, but presumably during 1977–1986) by Vyas (1996).
Northern Lapwing Vanellus vanellus	W, UC	
YELLOW-WATTLED LAPWING Vanellus malarbaricus	R, O	
RIVER LAPWING Vanellus duvaucelii	R, UC	Nesting recorded (Ganguli 1975)
RED-WATTLED LAPWING Vanellus indicus	R, C	
SOCIABLE LAPWING Vanellus gregarius	?, O	See text
WHITE-TAILED LAPWING Vanellus leucurus	W, UC	
Oriental Pratincole Glareola maldivarum	LM, O	
Small Pratincole Glareola lactea	LM, O	In late May–early June 1986 several birds performed broken-wing display but no nests found (Vyas 1996)
Indian Skimmer Rynchops albicollis	O	See text
MEW GULL Larus canus	V	A first-winter bird on 19 January 1992 (Alström 1993a)
Yellow-legged Gull Larus cachinnans	W, O	One adult and a few immature birds recorded by Ganguli (1975)
Pallas's Gull Larus ichthyaetus	W, O	Infrequently recorded (Ganguli 1975)
Brown-Headed Gull Larus brunnicephalus	W, UC	
Black-headed Gull Larus ridibundus	W, UC	First recorded by Hutson (1954). This species is commoner than Brown-headed Gull and both species have increased in Delhi since the 1960s (Vyas 1986)
SLENDER-BILLED GULL Larus genei	V	One on 21 January 1990 ( Menon et al. 1995)
LITTLE GULL Larus minutus	V	An adult on 31 December 1992 (Oriental Bird Club Bull. 17: 51)
GULL-BILLED TERN Gelochelidon nilotica	W', ?	One on 17 March 1991 (S. Madge in litt. 1995)
Caspian Tern Sterna caspia	V	Five on 14 April 1996 (TI)
RIVER TERN Sterna aurantia	LM, R, U	
Common Tern Sterna hirundo	PM (?), O	
LITTLE TERN Sterna albifrons	?, O	Single birds recorded uncommonly (Ganguli 1975)
Black-bellied Tern Sterna acuticauda	R(?), UC	See text
Whiskered Tern Chlidonias hybridus	R, C	3000 recorded in a 3 km stretch of the river upstream from Okhla in mid-April (Vyas 1996)
White-winged Tern Chlidonias leucopterus	PM, V	One in breeding plumage on 9 June 1986 (Vyas 1996)
Black Tern Chlidonias niger	R, PM	Two sighted in September 1998 (SV) and July 1999 (JH)
Osprey Pandion haliaetus	W, O	Recorded in winter 1978–1979 (Vyas 1996)
ORIENTAL HONEY-BUZZARD Pernis ptilorhyncus	R(?), O	An immature on 17 May 1986 (Vyas 1996)
Black-shouldered Kite Elanus caeruleus	R, O	
BLACK KITE Milvus migrans	R, C	
Brahminy Kite Haliastur indus	V	Two immatures in July 1985 (Vyas 1996)
PALLAS'S FISH EAGLE Haliaeetus leucoryphus	W, R, V	See text
GREY-HEADED FISH EAGLE Ichthyophaga ichthyaetus	V	See text
EGYPTIAN VULTURE Neophron percnopterus	R, C	·
White-rumped Vulture Gyps bengalensis	R, C	See text
	R, UC	See text
Indian Vulture Gyps indicus		One bird near Okhla on 28 June 1969 (Ganguli 1975)
Cinereous Vulture Aegypius monachus	V	one one mean on 20 June 1909 (Gangan 1919)
Cinereous Vulture Aegypius monachus Crested Serpent Eagle Spilornis cheela	V	Singles in 1989 (month not mentioned; KV) and May 2001 (DBK)
Cinereous Vulture Aegypius monachus		

Species	Status	Notes
Long-legged Buzzard Buteo rufinus	W, O	
Common Buzzard Buteo buteo	V	Berlijn et al. (1988)
UPLAND BUZZARD Buteo hemilasius	V	One in December 2001 (DBC)
Greater Spotted Eagle Aquila clanga	W, O	Hough (1990) [Note: added in proofs and hence this Vulnerable species is omitted from main text under Significant bird records]
Tawny Eagle Aquila rapax	?, O	
Steppe Eagle Aquila nipalensis	W, O	Alström (1993b)
Bonelli's Eagle Hieraaetus fasciatus	V	One undated record mentioned by Hutson (1954)
COMMON KESTREL Falco tinnunculus	W, O	
Merlin Falco columbarius	W, R	One in January 2000 (CH)
Eurasian Hobby Falco subbuteo	V	One (undated) in 1963 (Ganguli 1975)
Laggar Falcon <i>Falco jugger</i>	R, O	Nesting recorded (Ganguli 1975)
Peregrine Falcon Falco peregrinus	W, UC	1–2 birds seen every winter (Vyas 1996)
LITTLE GREBE Tachybaptus ruficollis	R, C	
GREAT CRESTED GREBE Podiceps cristatus	W, UC	Recorded mostly from the central areas of the lake
Darter Anhinga melanogaster	R, UC	See text
LITTLE CORMORANT Phalacrocorax niger	R, C	Breeds at Delhi zoo, a few km upstream from Okhla (Urfi 1997)
INDIAN CORMORANT Phalacrocorax fuscicollis	R, C	Breeds at Delhi zoo, a few km upstream from Okhla (Urfi 1997)
Great Cormorant Phalacrocorax carbo	R, C	
LITTLE EGRET Egretta garzetta	R, C	A roost of 50-60 birds recorded by Hutson (1954); breeds at Delhi Zoo, a few km upstream from Okhla (Urfi 1997)
Western Reef Egret Egretta gularis	V	One seen a few km upstream from Okhla on 7 November 1963; another on 9 July 1969 (Ganguli 1975)
Grey Heron Ardea cinerea	R, C	
Purple Heron Ardea purpurea	R, C	Large numbers nested in the past (Ganguli (1975) and some still do (Vyas 1996)
Great Egret Casmerodius albus	R, UC	
NTERMEDIATE EGRET Mesophoyx intermedia	R, C	Breeds at Delhi zoo, a few km upstream from Okhla (Urfi 1997)
CATTLE EGRET Bubulcus ibis	R, C	Breeds at Delhi zoo, a few km upstream from Okhla (Urfi 1997)
Indian Pond Heron Ardeola grayii	R, C	Roost recorded by Hutson (1954); breeds at Delhi Zoo, a few km upstream from Okhla (Urfi 1997)
LITTLE HERON Butorides striatus	R(?), O	The only records from Okhla are those of Hutson (1954) and Ganguli (1975)
Black-crowned Night Heron Nycticorax nycticorax	R, C	Breeds at Delhi zoo, a few km upstream from Okhla (Urfi 1997)
YELLOW BITTERN Ixobrychus sinensis	R, UC	Recorded along the Agra canal (Ganguli 1975); specimens collected by Donahue (1967); breeding recorded during May–August 1995 (Vyas 2002)
CINNAMON BITTERN Ixobrychus cinnamomeus	R, UC	Recorded by Ganguli (1975); breeding recorded during May-August 1995 (Vyas 2002)
BLACK BITTERN Dupetor flavicollis	R, O	Recorded by Ganguli (1975); specimens collected by Donahue (1967); one on 12 October 1997 near Madanpura (Vyas 2002)
GREATER FLAMINGO Phoenicopterus ruber	LM, C	Most recent sighting in September 2002 (pers. obs.)
BLACK-HEADED IBIS Threskiornis melanocephalus	R, C	See text
BLACK IBIS Pseudibis papillosa	R(?), UC	A single nest recorded by Ganguli (1975); now often seen in small flocks numbering 5-7 birds
Eurasian Spoonbill Platalea leucorodia	?, C	
GREAT WHITE PELICAN Pelecanus onocrotalus	W(?), UC	Breeds at Delhi zoo, a few km upstream from Okhla (Urfi 1997)
DALMATIAN PELICAN Pelecanus crispus	W, O	See text
PAINTED STORK Mycteria leucocephala	R, C	See text
ASIAN OPENBILL Anastomus oscitans	R(?), C	
Woolly-necked Stork Ciconia episcopus	R(?), O	
WHITE STORK Ciconia ciconia	W, UC	
BLACK-NECKED STORK Ephippiorhynchus asiaticus	R(?), O	See text
LESSER ADJUTANT Leptoptilos javanicus	M, O	See text
Greater Adjutant Leptoptilos dubius	V	Kalpavriksh (1991) [Note: added in proofs and hence this Critically Endangered species is omitted from main text under Significant bird records]
RUFOUS-TAILED SHRIKE Lanius isabellinus	W, O	Occurs during November-March (Ganguli 1975)
Brown Shrike Lanius cristatus	V	One during 15–25 December 1985 (Vyas 1996)
BAY-BACKED SHRIKE Lanius vittatus	R, C	
Long-tailed Shrike Lanius schach	R, O	

Species	Status	Notes
SOUTHERN GREY SHRIKE Lanius meridionalis	V	Inskipp and Inskipp (1977)
Rufous Treepie Dendrocitta vagabunda	R, C	
House Crow Corvus splendens	R, C	
Large-Billed Crow Corvus macrorhynchos	R, UC	
Eurasian Golden Oriole Oriolus oriolus	R, UC	
SMALL MINIVET Pericrocotus cinnamomeus	R, O	
WHITE-BELLIED MINIVET Pericrocotus erythropygius	W, O	
Long-tailed Minivet Pericrocotus ethologus	W, O	Recorded as perhaps regular by Ganguli (1975)
WHITE-BROWED FANTAIL Rhipidura aureola	R, O	Recorded by Ganguli (1975)
BLACK DRONGO Dicrurus macrocercus	R, C	
Ashy Drongo Dicrurus leucophaeus	V	One seen in May 2001 (WGH)
WHITE-BELLIED DRONGO Dicrurus caerulescens	V	Only one record by Ganguli (1975)
Common Woodshrike Tephrodornis pondicerianus	R, UC	
Orange-headed Thrush Zoothera citrina	W, O	One on 1 November 1964 in an acacia plantation (Ganguli 1975)
Red-throated Flycatcher Ficedula parva	PM, O	
VERDITER FLYCATCHER Eumyias thalassina	V	One male in a grove of 'sheesham' trees on 31 March 1969 (Ganguli 1975)
GREY-HEADED CANARY FLYCATCHER Culicicapa ceylonensis	W, O	Calls heard from a clump of 'neem' trees near Okhla (Ganguli 1975)
SIBERIAN RUBYTHROAT Luscinia calliope	V	One male on 24 March 1979 (Vyas 1996)
BLUETHROAT Luscinia svecica	W, PM, U	
ORIENTAL MAGPIE ROBIN Copsychus saularis	R, UC	
Indian Robin Saxicoloides fulicata	R, C	
BLACK REDSTART Phoenicurus ochruros	W, O	
PLUMBEOUS WATER REDSTART Rhyacornis fuliginosus	V V	One in February 1999 (SM)
Common Stonechat Saxicola torquata	W, C	one in restaury 1999 (circy)
WHITE-TAILED STONECHAT Saxicola leucura	R, C	Seen in reedbeds and wet cultivation during 1985–1986 (Vyas 1996)
PIED BUSHCHAT Saxicola caprata	R, C	2001 11 10000000 1110 1010 1010 1010 10
DESERT WHEATEAR Oenanthe deserti	V	Baker (1981)
Brown Rock-chat Cercomela fusca	R, C	Dunet (1901)
CHESTNUT-TAILED STARLING Sturnus malabaricus	V	Two on 21 April 1963 (Ganguli 1975); one on 7 March 1979 (Vyas 1996)
Brahminy Starling Sturnus pagodarum	R, C	The on 21 april 1909 (danger 1919), one on the contract 1919 (type 1990)
Rosy Starling Sturnus roseus	W, PM, U	IC
Common Starling Sturmus vulgaris	W, C	
ASIAN PIED STARLING Sturnus contra	R, C	
COMMON MYNA Acridotheres tristis	R, C	·
Bank Myna Acridotheres ginginianus	R, C	
CHESTNUT-BELLIED NUTHATCH Sitta castanea	R(?), O	Two in an acacia grove on 14 December 1964 and one on 1 February 1965
Onesther beeled Normaton Sina castanea	κ(.), Ο	(Ganguli 1975)
Spotted Creeper Salpornis spilonotus	R(?), O	One seen on a Dalbergia sisso tree on 1 February 1965 (Ganguli 1975)
WHITE-CROWNED PENDULINE TIT Remiz coronatus	V	
PALE MARTIN Riparia diluta	V	Eight in July 2001 (WGH)
Plain Martin Riparia paludicola	R, C	
Dusky Crag Martin Hirundo concolor	R, C	
Barn Swallow Hirundo rustica	W, UC	
Wire-tailed Swallow Hirundo smithii	R, C	Nesting recorded (Hutson 1954)
Red-rumped Swallow Hirundo daurica	R, C	
STREAK-THROATED SWALLOW Hirundo fluvicola	?, 0	Baker (1981, Holman 1993, Inskipp and Inskipp (1993)
Northern House Martin Delichon urbica	V	One in April 1999 (CGH)
Red-whiskered Bulbul Pycnonotus jocosus	R, UC	
Red-vented Bulbul Pycnonotus cafer	R, C	
ZITTING CISTICOLA Cisticola juncidis	R, UC	Nesting recorded (Ganguli 1975)
Graceful Prinia Prinia gracilis	R, UC	
Grey-breasted Prinia Prinia hodgsonii	R, C	
Yellow-bellied Prinia Prinia flaviventris	R, C	First recorded in 1985–1986 (Vyas 1996)
Ashy Prinia Prinia socialis	R, C	

Status	Notes
R, C	
R, C	
V?	Baker (1981)
V	Berlijn et al. (1988), Holman (1993)
R(?), UC	Recorded as abundant by Ganguli (1975), but now considered uncommon
R, C	
W, C	
W, C	Recorded by Harris (2001)
PM, C	Recorded by Harris (2001)
V	One in April 1951 (Hutson 1954)
R, UC	
?	See text
R, C	
	A specimen collected by Donahue (1967)
	Presumed to be common (Harris 2001)
	A male seen in an acacia grove on 14 December 1965 (Ganguli 1975)
	First recorded 1 June 1996 (CI, TI, SV)
	That recorded 1 June 1770 (OI, 11, 01)
	Alström (1993b)
	Nesting recorded at Okhla (Ganguli 1975)
	Nesting recorded at Okina (Gangun 1979)
	One in September 2001 (MK/DBC)
	One in September 2001 (MK/DBC)
	A '1 -1 - P - O - P (1075)
	Accidental according to Ganguli (1975)
	N
	Nesting recorded (Hutson 1954)
	One in May 1949 (Hutson 1954)
	Alström (1993b)
	Nesting recorded (Ganguli 1975)
?	See text
R, O	
R, C	
R(?), O	Recorded by Ganguli (1975) and Vyas (1996)
W, O	
PM, R	One recorded in April 1999 (CGH)
	R, C R, C V? V R(?), UC R, C W, C W, C W, C PM, C V R, UC ? R, C R, C R, C R, C R, C R, C R, UC R, UC V R, UC R, UC V R, UC R, UC V R, UC R, UC R, UC R, UC V R, C

Key

Status: (largely based on Ganguli 1975); W = Wintering; R = Resident; M = Migrant (summer or monsoon migrant); PM = Passage Migrant; LM = Local Migrant; ? = unknown seasonal status; C = Common (seen in large numbers on the majority of visits); UC = Uncommon (seen in small numbers on the majority of visits); O = Occasional (seen in small numbers on a few occasions); V = Vagrant.

Notes: Letters in parentheses refer to the individuals responsible for the sighting: MK= Martin Kelsey; DBC= Delhi Bird Club; CGH= Clive Harris; WGH= Bill Harvey; CI = Carol Inskipp; TI = Tim Inskipp; KK= Krys Kazmierczak; SM= Steve Madge; PM= Paul Holt; JH= Joakim Hammer; SV= Sudhir Vyas; PU= Per Undeland; MB= Martin Barry; EW= Erika Wilson.

In addition, the following 27 species were listed by Harris (2001) as being of probable, but unconfirmed, occurrence, and no further details have been traced: Common Quail Coturnix coturnix, Marbled Duck Marmaronetta angustirostris, Grey-bellied Cuckoo Cacomantis passerinus, Barn Owl Tyto alba, Jack Snipe Lymnocryptes minimus, Bridled Tern Sterna anaethetus, Indian Spotted Eagle Aquila hastata, Imperial Eagle Aquila heliaca, Booted Eagle Hieraaetus pennatus, Red-necked Falcon Falco chicquera, Great Bittern Botaurus stellaris, Little Bittern Ixobrychus minutus, Asian Paradise-flycatcher Terpsiphone paradisi, Blue Rock Thrush Monticola solitarius, Variable Wheatear Oenanthe picata, Sand Martin Riparia riparia, Booted Warbler Hippolais caligata, Mountain Chiffchaff Phylloscopus sindianus, Dusky Warbler Phylloscopus fuscatus, Sulphur-bellied Warbler Phylloscopus griseolus, Bimaculated Lark Melanocorypha bimaculata, Richard's Pipit Anthus richardi, Tawny Pipit Anthus campestris, Blyth's Pipit Anthus godlewskii, Long-billed Pipit Anthus similis, Black-headed Munia Lonchura malacca, and Crested Bunting Melophus lathami. Furthermore, Hutson (1954) listed Rook Corvus frugilegus from Okhla, but this record is regarded as doubtful.